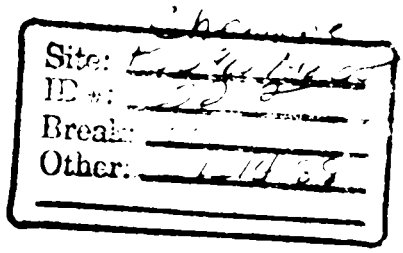

WORK PLAN REVISION REQUEST
GALENA, TREECE, AND BAXTER SPRINGS SUBSITES

Cherokee County Site
Cherokee County, Kansas

102-7L37/W68540

January 14, 1988

WORK PLAN REVISION REQUEST (WPRR)
CHEROKEE COUNTY SITE

INTRODUCTION

This work plan revision requests additional funding for the Cherokee County Site to cover incurred and planned costs for the project in three general areas. First, EPA Region VII has requested CH2M HILL to conduct activities not previously included in the work plans prepared thus far for RI/FS work at the site. Second, project costs were incurred on a few major activities above the effort planned and estimated in the approved work plans, and funds are requested in this WPRR to cover this additional effort asked for by Region VII. The rationale for the increased effort or scope is provided below. Third, there are some planning tasks currently defined in draft work plans being reviewed by the PRPs and other agencies, but EPA wants to start work on these as soon as practical. Therefore, approval of funds for these planning tasks, summarized below, are requested.

The tasks falling within these three general areas are listed in Table 1. Within the first group, referred to in this WPRR as "New Activities," are funds for a Subsite Reconnaissance Activity, funds for Project Management for overall site activities for 6 months, funds to cover laboratory analyses originally planned for the Contract Laboratory Program (CLP), and efforts to prepare this and a future WPRR. In the second group, the additional effort and rationale for changes in scope are described for three activities covered under previously approved work plans submitted in spring and early summer 1987. Within the third group are planning activities, such as preparing work plans, field operations plans, and subcontract specifications for initiating RI work at two of the six subsites within the Cherokee County Site. EPA

Table 1
ACTIVITIES/TASK INCLUDED IN THIS WPRR

GROUP I: NEW ACTIVITIES

A. Subsite Field Reconnaissance
B. Project Management
C. Laboratory Analyses--Surface Mine Wastes
D. Work Plan Revision Requests

GROUP II: ADDITIONS TO EFFORT/SCOPE

A. Surface and Subsurface Hydrology Investigations
B. Groundwater Technical Memorandum
C. Surface Water Technical Memorandum

GROUP III: NEW SUBSITES--PLANNING

wants to begin work at these subsites in early 1988. Therefore, funds for planning-type tasks are requested in this WPRR while the work plans for the actual field programs are being reviewed by PRPs and state and local agencies.

GROUP I: NEW ACTIVITIES

ACTIVITY A: SUBSITE FIELD RECONNAISSANCE

Activities from 1985 to 1987 at the Cherokee County Site have been focused on the Galena Subsite and the Spring River mainstream. These investigations have been conducted to establish a data base for operable unit feasibility studies (OUFS) at the Galena Subsite, and to estimate metal loadings along the Spring River and in the major tributaries to the Spring River in Kansas.

Region VII has requested preliminary field surveys (Recon Surveys) of the other four subsites that drain into the Spring River to help determine the priorities for further RI work and begin defining the scope of these potential investigations. The four subsites are Waco, Lawton, Badger, and Baxter Springs.

The following sections discuss the scope of the reconnaissance surveys. More effort is directed towards the Baxter Springs Subsite than the other three northern subsites because data regarding Spring River metal loadings indicate there is substantial mine drainage from this area into local surface streams and the Spring River. Also, Baxter Springs has a population of approximately 4,700 people that are potentially exposed to impacts from the mined sections, as compared to the other three subsites with a combined population of only about 200 people.

The activities within the work scope for the reconnaissance survey include prefield activities (defined below), limited field work, and preparation of a technical memorandum to document the reconnaissance findings. Prefield activities (planning and review of existing literature, photographs, and maps) were conducted during summer 1987, and field work for the Waco, Lawton, and Badger subsites was completed while crews were in the field working on the Galena Subsite during 1987. Therefore, airfare and project management functions were covered under existing approved work plans. This WPRR identifies the labor and daily expenses not included in previous budgets but required for the prefield planning, the field work at all four subsites, and preparation of the technical memorandum. Also, because one additional trip was required in the fall to complete the Baxter Spring reconnaissance, airfare and travel expenses are included for this single trip by a two-man crew.

Prefield Activities

Prior to conducting the field work, the following activities were performed for each subsite:

- Review existing subsite photographs (aerial and surface).
- Review existing literature applicable to the subsites.
- Review residential well data.
- Review topographic maps.
  - Identify major features to be field confirmed.
  - Identify drainage courses and watersheds.

- Prepare list of streams for reconnaissance of water quality and flow evaluations, and locate approximate sampling points for field survey and confirmation.

Field Activities

The general purpose of the field reconnaissance is to gather additional information on those features identified during the prefield activities and gather reconnaissance-level field data on existing conditions. In addition, limited water quality samples will be taken for analyses. The primary purpose for water quality testing is to obtain general field screening information regarding contaminants, so CLP accuracy and precise data measurement are not required. The field activities are grouped below as visual surveys and water quality surveys.

Visual Surveys. A two-person crew will survey the areas on foot, record field observations in log books, on field maps, and by photographs. The crew will:

1. Identify major features such as mine waste piles, subsidence areas, open mine shafts, point source discharges, and stream reaches that are potentially gaining groundwater.

2. Photograph major features.

3. Add major features not shown on existing mapping.

4. Characterize waste piles--estimate waste volume, material identification (e.g., bull rock, chat, tailings).

5. Identify and photograph areas of erosion, iron deposition along streams, and other evidence of actual or potential acid mine drainage (AMD).

6. Note and map minor drainages not shown on existing mapping.

7. Estimate depth to water in mine shafts and wells where possible.

Water Quality Survey. At frequent points along streams (including those identified in the prefield work), at mine shafts within each subsite, and at locations of obvious seeps or other discharges, the following water quality parameters will be measured:

1. Specific conductivity
2. pH
3. Temperature
4. Flow (visual estimate)
5. Manganese
6. Sulfate
7. Iron
8. Zinc

The specific conductivity and pH will be measured first, and if these parameters indicate potential AMD or other inorganic contamination, then sulfate and select metals concentrations will be estimated using a Hach field colorimeter.

All water quality survey points will be photographed and located on maps. The date and time of all sampling will be noted.

Technical Memorandum

Data will be tabulated and preliminary conclusions documented in a draft technical memorandum to EPA Region VII. Comparisons to conditions at the Galena Subsite will be developed where appropriate.

The technical memorandum will be finalized following receipt and inclusion of Region VII comments.

Baxter Springs Subsite

The Baxter Springs Subsite reconnaissance was conducted using the same approach and sampling protocol as discussed previously. However, prior to our field work, a tour of the subsite was conducted at EPA's request with state (KDHE) and city officials. The City of Baxter Springs is located within this subsite, and both city and state agencies have received reports of groundwater discharges and water quality problems in this area. Local individuals, with specific knowledge of subsite conditions assisted in locating specific areas impacted by previous lead-zinc mining. A 1-day reconnaissance with city officials and a representative from KDHE was conducted in May 1987. A 2-day field survey was conducted in early fall 1987.

ACTIVITY B: PROJECT MANAGEMENT

The budget for managing the overall Cherokee County Site activities, including coordinating the various field investigations and OUFSs that are being conducted concurrently, has been funded in 3-month blocks by incorporating this activity into various work plans. Project management (PM) funds through March 1987 were included within the interim authorization budget approved by EPA in early 1987. Project management funds for April through June 1987 were included

in the Surface and Subsurface Hydrology work plan approved in March 1987. Project management funds for July through September 1987 were included in the Galena Subsite Groundwater OUFS work plan approved in June 1987. This WPRR requests project management funds for sitewide tasks for October 1987 through March 1988. The WPRR includes the PM funds for October through December 1987, because the prior request has been shelved. The PM funds were originally requested in the Galena Subsite Surface Water OUFS work plan, but that draft work plan was then shelved when the groundwater and surface water components were combined into one OUFS without incorporation of PM funding for that period. The January through March 1988 PM funds were requested in the Baxter Springs RI Draft work plan which EPA has now rescheduled for later approval. The January through March funds are requested because this WPRR will be submitted for approval prior to any other work plans now in progress.

The project management effort includes those management activities necessary to direct the total Cherokee County RI/FS, provide the principal communication link between EPA and the project, and coordinate the various project activities such as the Baxter Springs RI, the Treece RI, and the ROD support to EPA on the OUFSs.

The site manager (SM) will perform most of the tasks within this activity. Functions to be performed as part of the total project management include:

- Provide principal liaison with EPA and ZPMO on all project matters.

- Direct project planning and coordinate all project activities.

- o Provide technical guidance and quality in concert with the senior technical review team.

- o Prepare technical, schedule, and financial reports monthly for EPA and ZPMO.

- o Coordinate communication between we, the associate firms, and subcontractors.

- o Develop and maintain project schedules in concert with the RPM.

Additionally, during July, August, and September 1987, the PM costs included a monthly, 2-day trip to Kansas City, two conference calls with EPA Region VII and the PRPs, and an early August meeting with the PRPs in Galena, Kansas. The SM and senior project geohydrologist attended the August PRP meeting. During October, November, and December, the PM costs included a monthly, 2-day meeting in Kansas City, two conference calls with the PRPs, and a 1-day meeting with the PRPs in Kansas City in early November. The SM, assistant SM, and senior geohydrologist attended the November PRP meeting. The January, February, and March 1987 PM costs included a monthly, 2-day meeting in Kansas City, a meeting with the PRPs in February, and conference calls with EPA/ KDHE/PRPs in January and March 1987.

ACTIVITY C: LABORATORY ANALYSES--
SURFACE MINE WASTES

The Mine Waste Characterization and Geophysics Work Plan for the Galena Subsite, submitted to EPA in May 1987, included collecting eight composite samples of surface mine wastes and analyzing these samples for metals content and leaching characteristics. The work plan activities were budgeted

assuming the samples would be analyzed by the CLP and, therefore, no costs were included in the work plan for laboratory analyses.

A special analytical services (SAS) request was prepared and EPA requested bids from several laboratories within the CLP. Because of the unique nature of the requested analyses and the limited time schedule, none of the CLP laboratories submitted bids. EPA Region VII requested the SM to inquire if a CH2M HILL laboratory could complete the analytical work, and to obtain a cost estimate if the work could be done. The SM subsequently confirmed that our Redding, California laboratory could do the work, at an estimate of about $1,500 per sample.

Eight composite mine waste samples were submitted in late August 1987. The following analyses were requested:

1. Particle size distribution analyses, using dried samples and standard sieve series

2. Total metal concentrations in the composite sample

3. EP toxicity test on each sample

4. A distilled water leach test on each of the 8 samples analyzed for 14 metals (total)

5. A sulfuric acid leach test on each sample, analyzed for 14 metals (total)

The samples were analyzed and results were available within 4 weeks after receipt of the samples. Distilled water and acid (sulfuric) leach tests used a rotary extraction procedure. An environmental scientist/chemist validated the

analytical results and prepared a brief memorandum on the validation results.

ACTIVITY D: WORK PLAN REVISION REQUESTS

The labor and expenses (computer time, typing, postage, etc.) required to prepare this WPRR and one future WPRR are included in this activity. The SM and one project staff member prepared this request. Considerable time was required to review the summer and fall costs incurred on several activities, review cost documentation on prior work plans, and compare actual costs to EPA requested changes or additions to original approved plans. The SM prepared the WPRR text and the rationale for scope increases, and will work with EPA Region VII and the RPM during the approval process. Labor and expense costs for all activities were loaded into the REM IV Superfunded Project Control System (SPCS) so that after EPA approval, task budgets and LOE changes can be made in the existing SPCS data base for the project.

The groundwater/surface water OUFS for the Galena Subsite was started in late summer 1987, and the final OUFS report was scheduled for submittal to EPA in late December 1987. Because of the technical complexity of the groundwater and surface water systems within the subsite, the necessity to model the interactions between these two systems, the recent addition of more area within the subsite boundary and the coordination between the project staff, EPA Region VII, KDHE, the Army Corps of Engineers, and the Bureau of Mines, the OUFS schedule has been extended. The SM and Activity Manager (AM) for the OUFS are currently working with the RPM to establish a revised schedule for delivery of the final OUFS. As soon as the schedule is established, the SM and AM will prepare a WPRR documenting the revised schedule and adjusting the labor and expense budgets through completion of the OUFS.

The funds required to prepare this upcoming WPRR are included in this WPRR.

GROUP II: ADDITIONS TO EFFORT/SCOPE

The summer and fall 1987 activities at the Cherokee County Site included a Surface and Subsurface Hydrology Investigation, a Sitewide Water Supply Inventory (including water quality sampling of private and municipal wells), a Mine Waste Characterization and Geophysical Survey at the Galena Subsite, a Technical Memorandum summarizing existing data on flow and water quality of the Spring River watershed, a Technical Memorandum summarizing existing information on the shallow and deep aquifers in the tri-state region, an OUFS on alternative water supply systems for the Galena Subsite, and a draft OUFS on the Galena Subsite surface water and groundwater systems. These above activities are largely complete, except for the surface water/groundwater OUFS.

Most of the above activities that have been completed, or are nearly completed, have proceeded according to plan and have been completed within the budgets established in the original work plans. However, there are three activities that exceeded work plan cost estimates because the required scope and work effort had to be revised. This WPRR presents the rationale for the change in scope and establishes the increase in budget required for these three activities. The three activities are the Surface and Subsurface Hydrology Investigation, the Technical Memorandum summarizing existing data/information on the regional groundwater system, and the Technical Memorandum on the Spring River watershed in southeast Kansas.

ACTIVITY A: SURFACE AND SUBSURFACE HYDROLOGY INVESTIGATIONS

The surface/subsurface hydrology program was developed to acquire hydrologic and water quality data under high flow conditions at the Cherokee County Site by obtaining simultaneous data records to evaluate storm event effects on groundwater levels, surface water flows, and surface water quality in the Galena Subsite. This program was planned assuming spring high flow conditions and some summer thunderstorms would occur during a 4-month period in spring and early summer. Because of unusually dry weather patterns, these high flow conditions, suitable for acquiring the necessary data, did not occur even though the sampling period was extended into November 1987.

The surface/subsurface hydrology work plan was approved in early April, and field crews were available that month waiting for a heavy, regional spring rainstorm. None occurred during April. The subcontract procurement process for installing flow weirs and continuous recording instruments was completed by early May, and a strong weather system moved into the area in early May. The project team went to the site and began the Spring River high flow hydrology sampling as the storm front moved through the area. However, the storm was not extensive enough to cover the whole watershed under study, and the sampling program was only partially successful. The field crews remained on site during May and completed the installation of weirs, stream flow gages, groundwater level recorders, and the meteorological instruments. Installation of all equipment was completed by Memorial Day weekend and the field crew, on site for nearly 3 weeks, was sent home. Unfortunately, the only significant rainstorm all summer occurred the day after the field crew departed.

Project field crews remained available throughout the 4 months covered by the work plan, and all recording equipment, except for the water level recorder on the single deep aquifer well, was maintained during the 4-month period as planned. The weather was extremely dry during that period and no high flow data were obtained. At the end of the 4 months (May-August), an extension was requested by CH2M HILL because:

a. The recording equipment was in place and CH2M HILL could continue to monitor at a reasonably low cost. CH2M HILL had a local subcontractor who could continue servicing the equipment and sending data to the project team.

b. An understanding of the interactions between rainfall events and changes in the groundwater systems and surface stream flows was critical for the groundwater/surface water OUFS at the Galena Subsite. Continuous monitoring through two or more large rainstorms was desired.

c. A delay in acquiring EPA access to the only deep well in the area suitable for monitoring the groundwater level of the deep aquifer put that effort behind schedule. This information was also critical to the OUFS.

With EPA approval, all monitoring equipment was kept in place and monitoring continued through most of November.

The surface and subsurface hydrology program exceeded the original work plan budget estimates because of the extended monitoring period, and because subcontract costs were higher

than anticipated. The cost increase can be categorized into four general groups:

1. Subcontract Expenses. The work plan estimated $21,000 for subcontract costs, including a local subcontractor to read stream gages and take conductivity/temperature readings daily and service recorders weekly. This cost estimate assumed local construction contractors would bid on the work. However, because of the hazardous waste contract stipulations, required since the site is a Superfund site, local contractors were not interested. CH2M HILL received only one written bid, from a Kansas City firm. The bid was for $48,600. Much of this cost difference was due to the fact that some weir structures had to be larger than originally planned (additional sand bags), shallow groundwater level recorders had to be put over mine shafts rather than on abandoned shallow wells as originally conceived in the work plan, and contractor transportation costs between Kansas City and the site were required. After a review of the single bid, the necessary change in work scope related to the above factors, and the cost and time involved with rebidding the work, EPA Region VII accepted the bid, and proceeded with a subcontract limit of $48,620. The Kansas City firm was given a $44,000 budget to install weirs, stream gages, and recorders. The SM contracted with Pittsburgh State University for the daily monitoring service, at a budget limit of $4,300. The difference between work plan subcontract expenses ($21,000) and actual contract expenses ($48,300) is shown in Table 2 as items 1 and 2.

2. Equipment/Field Office Expenses. The original hydrology work plan assumed the monitoring program would continue over a 4-month period and the field office would be needed for one month (an additional month of field

office expenses was covered by the geophysical survey work plan). Because of the dry weather conditions monitoring continued through November, and CH2M HILL proposed to Region VII that the office be maintained through February 1988 to store equipment. These extensions resulted in additional rental costs on the meteorologial tower, the field office, and various field equipment such as flow meters, pH meter, etc. (Table 2, items 3, 7, 8, and 9).

With EPA Region VII approval, two pieces of equipment were purchased, rather than rented for the project, as originally assumed in the work plan. A field conductivity, salinity, temperature meter was purchased for $600. This meter can be used continuously on the project for all water quality surveys at the Galena Subsite, and at other subsites in 1988. The eventual rental costs throughout this project (1987 and 1988 and maybe beyond) would far exceed the purchase price. Two continuous recording conductivity/pH Hydrolab units were purchased. In the work plan, it had been assumed CH2M HILL would use a strip chart recorder combined with a conductivity meter, and a probe would be used at the two flow gaging stations on Short Creek. The completely submersible Hydrolab units, although more expensive than the strip chart/ conductivity meter units, were recommended to EPA because:

a. They record three water quality parameters rather than one.

Table 2
SUBCONTRACT, EQUIPMENT, AND FIELD OFFICE COSTS FOR
SURFACE/SUBSURFACE HYDROLOGY INVESTIGATIONS
GALENA SUBSITE AND CHEROKEE COUNTY SITE

	Item	Work Plan Cost Estimate	Estimated Cost to Complete	Cost Difference	Comments
1.	Subcontract for Weir/Recorder Installation	$18,400	$44,000	$25,600	No local bidders, recorders on mine shafts.
2.	Subcontract for Daily Monitoring of Weirs	2,600	4,300	1,700	Work plan assumed 4 months, actually monitored for 6 months.
3.	Meteorological Tower--Rental	4,000	6,080	2,080	Work plan assumed 4 months, actually monitored for 7 months.
4.	Continuous Recording Conductivity/ pH Meter	1,600	8,525	6,925	Purchase rather than rent--advantage to project and EPA over time.
5.	Repair of Vandalized Cond./ pH Meter	0	650	650	One recorder vandalized in late summer.
6.	Continuous Recorder (On-Off) on City Well	0	240	240	$40/month for 6 months (June-Nov.) City of Galena stopped taking daily records.
7.	Field Office Rental	300	1,400	1,100	Field office rental was covered for 2 months (1 month each in two work plans). Actual rental will be 9 months (June 1987-Feb. 1988).
8.	Field Office Utilities	200	990	790	See comment for number 7.
9.	Equipment Rental	2,040	4,500	2,460	$1,030 in Task FW + $1,160 in Task FQ covered 1 month rental for hydrology and 4 months for monitoring.
10.	Field Conductivity/Salinity/Temp Meter	400	600	200	Meter purchased rather than rented. Advantage to the project and EPA over time.
Total		$29,540	$71,285	$41,745	

b. The digital micro-electronic recording system in the Hydrolab is much more accurate than the strip chart, and the data can be "dumped" directly into a microcomputer saving considerable data reduction time (labor costs).

c. The Hydrolab units are completely submersible and thus much less vulnerable to vandalism or theft.

d. The two Hydrolab units can be used continuously throughout the project; at the Galena Subsite, the other two to four subsites that will be studied in the future, and for monitoring remedial actions. Thus, the purchase price was considered less than eventual rental charges over the project life span.

The equipment purchase costs, compared to estimated rental charges in the work plan (4-month rental), are shown in Table 2 as items 4 and 10.

Two equipment cost items that were not included in the work plan were required during the hydrology investigations. The City of Galena water department personnel kept a log on the main municipal pump through early 1987 to record exact running times. This information was required to assess data collected on the water level of the deep aquifer. Because of revised reporting requirements, the City discontinued keeping the log and CH2M HILL had to put a recording ampmeter on the well pump to acquire these data. The recording ampmeter was used for 6 months (Table 2, item 6). The second cost item was repair costs for one of the submersible Hydrolab units. Some children, apparently playing or swimming in the pool behind the weir at Station 3, found the

submerged Hydrolab and tried to break it open. The repair cost was $650 (Table 2, item 5).

3. Travel Expenses. The hydrology work plan assumed 14 individual round trips between Denver and the site, or Kansas City and the site during the hydrology investigations. Most of these trips were planned during the initial field effort. Because the monitoring period was extended, and some damage was incurred to the weirs during summer due to local rainstorms, nine additional trips were required. This includes two people going to the site in early 1988 to remove the weirs. The difference between estimated costs in the work plan and the costs that will be incurred at the completion of this activity is about $7,600. This includes costs for airfare, car and van rental, mileage and gasoline costs, meals, and lodging.

4. Labor Costs. Additional labor costs were incurred during the surface and subsurface hydrology investigations because of the extended monitoring period; for the additional field work as well as data analysis requirements for the extra months. An extra field trip was required to re-activate the water level recorder on the deep well. Field trips were also needed in mid-June and late August to repair weirs.

   The additional labor costs requested in this WPRR also include several days of the site manager's time spent completing property access approvals prior to installing weirs and water level recorders. EPA was unable to acquire positive responses from some landowners through the mail, and two landowners requested negotiations with a project representative prior to signing property

access approvals. The SM provided this support at the request of the RPM.

Some additional labor (above that estimated in the work plan) was required to complete the field operations plan (part of the hydrology work plan) and the quality assurance project plan (QAPP). The additional work plan labor was primarily for developing the detailed field sampling instructions in the field operations plan, and revising sampling documentation and shipping procedures to match recently developed, updated procedures in Region VII. Additional labor on the QAPP was spent to set up a QAPP format that could be easily revised and added to as the project continued, and as work on other subsites was started. This extra effort should save time on future QAPP revisions, and precludes the necessity to write a new QAPP document as work on new subsites is started.

ACTIVITY B: GROUNDWATER
TECHNICAL MEMORANDUM

A technical memorandum on the groundwater systems in the tri-state area, especially southeastern Kansas, was prepared to summarize the existing data and scientific information on both the shallow and deep aquifers in the Cherokee County Site area. The technical memorandum (TM) was the end product of a review of the major publications on the regional groundwater systems, and also was a mechanism for compiling part of the data base required for the groundwater OUFS at the Galena Subsite. The original work scope proposed a draft TM be submitted to EPA in March, and a final TM by mid-May. The estimated budget, at the beginning of the effort, was $8,368 and 110 LOE hours.

A preliminary draft TM was submitted to EPA in late February. Following the EPA review, the RPM requested CH2M HILL revise the TM to place more emphasis on the project data collected. The February draft emphasized the regional and historical information regarding both the shallow and deep aquifers, based largely on the scientific literature. The groundwater TM was revised to incorporate all the groundwater data the project had collected from spring 1985 through 1986. This included data presented earlier in the Phase I RI report plus extensive well sampling data from summer 1986. The data were tabulated and compared to federal and state drinking water standards and other water quality criteria. Recently published scientific information (for example, a new master's thesis from Southern Missouri State University) and recent information from the Kansas Geological Survey, was included.

The revised draft TM was submitted to EPA in mid-April, then EPA review comments were addressed and a final TM was submitted in early June. The cost to complete the final TM was $16,322 and 210 LOE hours. This WPRR is submitted to EPA requesting the additional 100 LOE hours and $7,954, because the scope of the TM was changed in order to complete a final TM meeting the Region's revised requirements.

ACTIVITY C: SURFACE WATER
TECHNICAL MEMORANDUM

Similar to plans for the groundwater TM, a surface water TM was prepared to summarize the existing water quality and flow data for the Spring River watershed, especially the Spring River segment in Kansas and the major tributaries flowing into the Spring River in Kansas. This memorandum was planned to incorporate data collected during the Phase I RI and by the project staff in fall 1986 and January 1987, along with a larger data base known to exist in published

literature and EPA STORET data files. The original budget estimate for the surface water TM was set at 110 LOE hours and $8,368, the same as the groundwater TM. The planned schedule was to submit a draft TM to EPA Region VII by mid-April.

Existing published literature was reviewed and project staff worked with EPA to acquire the data available on EPA's STORET data base. The initial data search revealed a very extensive data base which included multiyear monitoring programs by USGS and KDHE, substantial data sets from EPA, and several shorter-term studies within the area of interest that contained data from numerous sampling stations. There was also data from a multitude of small studies.

EPA Region VII was informed that the extensive data base would require a larger data review/analysis effort than was originally conceived. The available data that might be useful to the project covered over 20 years in some cases, and was from several different agencies and research groups. The sampling locations for different studies were sometimes the same, but frequently different, and considerable effort would be required to map the sampling stations used in the various studies. Also, different studies analyzed for different water quality parameters, so metals data and other parameters of interest such as pH, specific conductivity, and sulfate concentration were not always available. Since one objective of the data search was to get information on metal loadings in the Spring River, CH2M HILL also had to search data bases to find those cases where metals concentrations and flow data were taken simultaneously.

CH2M HILL proposed to EPA Region VII that a more extensive data compilation effort be conducted because there were data sets within the huge data files that would provide valuable

water quality, flow, and metal loadings information. These data, once extracted, could be used to support and supplement data already acquired by the project itself. Also, it was possible that data in the files could assist CH2M HILL in defining influences from upstream coal mining areas or other upstream influences, or indicate where future investigations, if necessary, should be directed.

EPA Region VII agreed that a more extensive effort than originally planned was necessary. EPA directed the SM to proceed, based on the guidelines proposed by the SM and technical project staff. These guidelines were to work with the EPA STORET data base, primarily, and extract data sets with the following characteristics:

a. Data sets with all or most of the sampling stations within the Cherokee County Site area.

b. Data sets with a few to several sampling stations that contained consistent (similar) water quality parameters over many years.

c. Data sets from a single year or a few years duration that had many sampling locations within the site area.

d. Data sets that included simultaneous flow and metal concentrations data.

The project staff worked with EPA personnel to get portions of the EPA's STORET data files transferred to CH2M HILL's in-house computer system, and the team proceeded to compile and analyze the available data. Data analyses continued through May and a draft TM was submitted to EPA in mid-June. Following EPA review, a final TM was submitted in late July.

The project-to-date costs for this task are 439 LOE hours and $33,122. This work plan revision requests EPA approve the LOE and budget differences between the original plan and the project-to-date cost for this task.

GROUP III: NEW SUBSITES--PLANNING

EPA Region VII has requested the project staff initiate remedial investigations at the Baxter Springs and Treece subsites in early 1988. Draft work plans for both subsites have been submitted to the RPM, and EPA plans to have these reviewed internally by EPA and KDHE. Also, the RPM plans to submit Final Draft work plans to the PRPs for review prior to submitting these to EPA Headquarters for approval. This process may require 3 months before the final work plans and associated budgets are approved.

The work plan for Baxter Springs proposes water quality sampling and flow measurements during high flow conditions, and these conditions normally occur during the spring months of March, April, and May. In order to begin field work by early spring, all of the planning and field preparation type tasks should be completed in January and February. This WPRR, therefore, includes budgets for planning tasks for the Baxter Springs subsite. Work plan efforts for the Treece subsite is also included. The planning, field support, and subcontract procurement tasks that CH2M HILL requests funding for are presented in Table 3. The scopes of work for these tasks are more fully described in the draft work plans. If the budgets for these tasks can be approved during January, then the field operations plans, site safety plans, QAPP, subcontract technical specifications, lab space allocations, and so forth can be completed during February and early March. Then, as soon as the final work plans are

Table 3
PLANNING TASKS FOR REMEDIAL INVESTIGATIONS
BAXTER SPRINGS AND TREECE SUBSITES

Subsite	Task Title	Estimated LOE	Estimated Cost
Baxter Springs	PM: Project Management	184	$17,155
	WP: Work Plan	354	28,903
	FK: Field Work Support	666	41,709
Subtotal		1,204	$87,767
Treece	WP: Work Plan	42	$ 4,250
Subtotal		42	$ 4,250
TOTAL		1,246	$92,017

approved actual field work can be started. Field work will be conducted most efficiently if both subsites are done within the same time frame, because the same field office will be used for both, and the same field crews can work both sites.

This WPRR includes the LOE and dollar budgets for three of the Baxter Springs RI work plan tasks (Table 3) and one of the Treece RI work plan tasks. All tasks and subtasks will not be started until the final work plans are approved by EPA Headquarters.

COST ESTIMATE DETAILS

The Work Plan Task Summary (PRJ 200 Report) on the following page summarizes the LOE and cost estimates for the revisions requested in this WPRR. Following the summary table are detailed cost estimates for each of the activities described in this document. The SM is available to review these costs with EPA Region VII and will plan to discuss these with the RPM in Kansas City in early January.